

## Field Testing of a Wet FGD Additive for Enhanced Mercury Control

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This project is being conducted as part of NETL Cooperative Agreement DE-FC26-04NT42309, "Field Testing of a Wet FGD Additive." The objective of the project is to demonstrate the use of a flue gas desulfurization (FGD) additive, Degussa Corporation's TMT-15, to prevent the re-emissions of elemental mercury ( $\text{Hg}^0$ ) in flue gas exiting wet FGD systems on coal-fired boilers. Furthermore, the project intends to demonstrate that the additive can be used to precipitate most of the mercury (Hg) removed in the wet FGD system as a fine TMT salt that can be separated from the FGD liquor and bulk solid byproducts for separate disposal.

The project is conducting pilot- and full-scale tests of the TMT-15 additive in wet FGD absorbers. The tests are intended to determine required additive dosage requirements to prevent  $\text{Hg}^0$  re-emissions and to separate mercury from the normal FGD byproducts for three coal types: Texas lignite/Power River Basin (PRB) coal blend, high-sulfur Eastern bituminous coal, and low-sulfur Eastern bituminous coal.

The project team consists of URS Group, Inc. as the prime contractor, EPRI, TXU Generation Company LP, Southern Company, and Degussa Corporation. EPRI will provide technical input and co-funding. TXU Generation has provided the Texas lignite/PRB co-fired test site for pilot FGD tests, Monticello Steam Electric Station Unit 3, and is providing EPRI tailored collaboration project co-funding. Southern Company is providing the low-sulfur Eastern bituminous coal host site for wet scrubbing tests, as well as the pilot- and full-scale jet bubbling reactor (JBR) FGD systems to be tested. They are also providing on-site test support and management, and project co-funding through a tailored collaboration project with EPRI. AES' Indianapolis Power and Light Company has provided project co-funding and a high-sulfur Eastern bituminous coal full-scale FGD test site, at their Petersburg Station Unit 2. Finally, Degussa Corporation is providing the TMT-15 additive and technical support to the test program.

This presentation will include project results from the time period July 2005 (the most recent, previous DOE contractors' meeting) to the present. Over this time period, pilot-scale FGD additive tests have been conducted at TXU Power's lignite/PRB-blend-fired Monticello Station and at Georgia Power's Plant Yates, which fires low-sulfur Eastern bituminous coal. Full-scale tests were also conducted at AES' Indianapolis Power and Light Petersburg Station, which fires high-sulfur Eastern bituminous coal. During most of these tests, speciated mercury removal was measured across the FGD absorber using a mercury semi-continuous emission monitor (SCEM). Also, for the Monticello and Petersburg tests, the Ontario Hydro method was used to confirm SCEM data for FGD outlet mercury concentrations and re-emission levels. These data will be presented and discussed. Other results presented will include mercury mass balances around the Monticello pilot wet FGD system, and results which show the ability to size separate mercury-TMT salts from the FGD byproducts and which show the stability of mercury in these salts. For the Petersburg full-scale tests, results which show the effects of TMT addition on concentrations of other metals in the FGD liquor will be presented.